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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

MAY 18 2011

OFFICE OF
COMPLIANCE AND ENFORCEMENT

Reply To: OCE-127

Certified Mail Number 7009 1410 0002 1488 6025
Return Receipt Requested

James A. Cagle, Risk Manager - EHS
Nu-West Industries, Inc.
Agrium Conda Phosphate Operations
3010 Conda Road
Soda Springs, Idaho 83276

Re: Off-site Soil Sampling Plan – Sampling and Analysis Work Plan Addendum; Nu-West Industries, Inc., Conda Phosphate Operations Facility; November 24, 2010; Administrative Order on Consent Docket No. RCRA-10-2009-0186

FILE COPY

Dear Mr. Cagle:

This letter is in response to the Off-Site Sampling and Analysis Work Plan Addendum (SA-WPA) that was submitted pursuant to the June 2009 Administrative Order on Consent (Order) issued under Section 3013 of RCRA, Docket No. RCRA-10-2009-0186. After a review of the submittal, EPA has determined that the Off-site SA-WPA in its present form does not meet the requirements of the Order and will need substantial changes. EPA has the following comments.

General Comment 1

The sampling strategy presented in the Offsite SA-WPA does not meet the requirement of the Order to define the nature and extent of potential contamination at or from the Facility, both vertically and horizontally. The proposed sampling is limited to only areas where some past suspected releases occurred and provides no rationale for how the extent of impacted soil will be bound. Additionally, the sampling plans are generally based on judgmental designs, which may be adequate, but it will be difficult to quantify uncertainties in the sampling results or estimate the probability of decision errors. Biased judgmental samples need to be complemented with systematic or probabilistic samples to permit valid inferences. Judgmental sampling has limited inferential value and undefined uncertainties (U.S. Environmental Protection Agency 2002).

Soil and sediment sampling depth interval must be linked to the suspected release and transport processes. It is likely that contaminants of potential concern (COPCs) distributed by spills, overland flows, and fugitive dust may be concentrated in thin, surface layers that may be missed if diluted with a mass of cleaner substrate 0-6 inches below the surface as currently proposed. Sampling of the upper 0-2 inches as representative of surface soil needs to be conducted. Sampling to define vertical extent of surface soil contamination above screening levels, which may need to be targeted for cleanup, is to be sampled in 6 inch intervals until the lower boundary of contamination is defined since this is the minimum depth that a backhoe can likely remove.

Surface soil sampling is better suited to an incremental sampling design (see Method 8330B Revision 2: Nitroaromatics, nitramines, and nitrate esters by High Performance Liquid Chromatography (HPLC); Appendix A - collecting and processing of representative samples for energetic residues in solid matrices from military training ranges (U.S. Environmental Protection Agency 2006)). The multi-incremental sampling (MIS) approach will provide the data necessary to quantify the risk associated with statistically defensible measurements of concentrations of constituents of concern in the soil. MIS sampling also addresses field variability which is the greatest source of error relevant to site characterization to support defensible management decisions (Crumbling 2002; Crumbling, Hayworth et al. 2004). MIS sampling design is also the approach EPA requires for determining site-specific background concentrations for soils. The process of choosing decision units for MIS sampling needs to be done in a data quality objective (DQO) process with EPA.

The factors to consider include:

1) What is the footprint of each spill, and how accurately is that footprint known?
2) How will the footprint be confirmed with sampling?
3) How will the spill area be bounded and the units "outside" the contaminated area quantify as to acceptable risk?
4) What is the appropriate size of the exposure area for ecological or human health risk estimates?
5) What remedial actions are anticipated for the spill area?
6) If excavation is chosen as a remedial action, then the unit size should be in increments of what the facility is willing to lump into a removal.
7) What depths are practical to excavate, and how deep to perform assessment sampling?
8) What kinds of statistics will the facility use to determine risk or deviation from the site background?

Once agreement is reached on the appropriate decision units, each of these units must be sampled with an approach that results in random locations being sampled and allotted to each of the discrete sample depths for homogenization and analysis. A typical MIS sample is made up of at least 30 sub-samples, and triplicates MIS samples must be collected in at least a sub-set of decision units so the 95 percent UCL can be calculated.

General Comment 2

The site human health/ecological risk screening and soil background values that will be used to define the nature and extent of impacted soil contamination have not been adequately defined in the WPA.

The WPA must use current EPA human health PRGs for chemicals and radionuclides, initially based on residential land use from the following sources. Screening for COPCs must be based on a target hazard quotient of 0.1 to account for potential cumulative adverse health effects. The following sources are based on a hazard quotient of 1.0 and will need to be reduced by a factor of ten. A target cancer risk of 1 in a million is acceptable for screening:

http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm
http://rais.ornl.gov/cgi-bin/prg/PRG_search?select=chem
http://epa-prgs.ornl.gov/radionuclides/

Ecological screening values must be included in the WPA.

There do not appear to be any specific ecological screening levels referred to in the WPA. The PRGs cited in the WPA document are human health based and include EPAs PRG screening levels for residential soil or IDEQs Risk Evaluation Manual Initial Default Target Levels for commercial/industrial direct exposure for the protection of groundwater and surface water.

There are a number of soil screening levels that must be used to determine if COPCs in soil are elevated and pose a risk to ecological receptors. The WPA must rely on EPA's Eco-SSLs as the primary source of these screening levels:

http://www.epa.gov/ecotox/ecossl

Where an Eco-SSL is lacking for a COPC or ecological receptor then screening level benchmarks developed by the Oak Ridge National Laboratory (ORNL) should be used.

http://www.esd.ornl.gov/programs/ecorisk/benchmark_reports.html

There are no screening levels for calcium, magnesium or sodium. These COPCs must be compared to background levels to evaluate the potential for risk to ecological receptor species.

Screening COPCs must be done on a receptor-specific basis using a hazard quotient of 1.0 as the trigger for potential risk.

Background data needs and how background levels are considered in decision rules for COPC definition and nature and extent determination must be defined in the WPA. Background measurements must include mean and confidence limits (U.S. EPA 2002). The site specific background sampling approach must utilize an MIS design and the WPA must include adequate rationale for design of off-site sampling locations. Previous work on Eastern Michaud Flats Superfund site in Pocatello, Idaho provides a template that can be used as a basis for an incremental soil sampling approach designed to:

1) Determine nature and extent of soil contamination by estimating mean and variance of COPCs
2) Estimate mean and variance of COPCs in undisturbed locations to estimate background levels

General Comment 3

The rationale for the COPC selection has not been adequately defined in the WPA. The WPA must strengthen links between the preliminary conceptual site model (section 3) and the DQOs (section 4) presented in the June 29, 2010 SAP-WP.

Soil data that was collected as part of the recent plant area investigation should be presented and utilized to provide rationale for the list of COPCs presented in the WPA. The WPA must document whether the sources and transport mechanisms have been adequately defined to inform the DQO process. EPA requires that Nu-West provide additional support for COPC definition with separate, quantitative analysis (mean and standard deviation) of levels in feedstocks, by-products, waste materials, releases, and spills.

Specific comments:

1. Provide rationale for not including mercury and uranium (total elemental based on the MCL chronic renal RfD) as COPCs (see Stifelman 2008) or add additional PRGs for residential land use (soil/sediment in mg/kg):

Mercuric chloride (+2)	23	(see Diamond 2011)
Uranium (non-cancer, MCL RfD)	47	(see Stifelman 2008)
Vanadium	5.5	(see Diamond 2011)

2. Provide rationale for why the following radionuclides should not be considered COPCs and target analytes: Lead-210, Polonium-210, Potassium-40, Uranium-235, -237, 238, gross alpha. This applies to on-site as well as planned off-site soil sampling.

3. Clarify whether sources or processes (feedstocks, by-products, waste materials, etc.) associated with releases changed over time.

4. Expand the Data Quality Assurance discussion that is currently limited to analytical chemistry and does not address field variability which is more relevant to site characterization to support defensible management decisions (see Crumbling 2002; Crumbling, Hayworth et al. 2004).

5. Provide a rationale for the correlation between field gamma measures and soil Radium levels. The Off-site SA-WPA requires detailed procedures and quantitative criteria for acceptance.

6. The November 2003 spill from the West Cooling Pond was not addressed in this plan, and must be incorporated by decision units along the property boundary with the east-west roadway along the north side of that pond.

7. Contradictory statements in the text about the meaning of the presence of limestone in the sample area need to be corrected. On page 2, in Section 2.1, the statement is made, "Crushed limestone was placed in the spill footprint to neutralize any residual acidity." On the next page in Section 2.2 is the statement, "If crushed limestone or fill soil is encountered, which would suggest that the area was previously excavated, the sample location will be adjusted to an alternative location within the segment based on field judgment." Using this, it sounds as if it will be impossible to sample anywhere in the original footprint of the spill because the presence of limestone will cause the sample to be taken elsewhere. Other concerns center on the ability of the field personnel to differentiate between native material, spill material, and fill during sampling. Much more clarity in the plan is needed to specify how these materials will be identified if that is possible and if not possible, what will determine decision unit boundaries and specific sample locations.

8. Confirm that the method proposed for fluoride analysis will provide total fluoride concentration and not just soluble fluoride concentration.

In accordance with paragraph 69 of the Order, Nu-West is required within 30 calendar days of receipt of this letter to submit a revised Offsite SA-WPA which responds to EPA's comments and/or corrects the deficiencies identified by EPA.

I believe that it would be beneficial to schedule a conference call with your technical personnel and our EPA scientists to clarify comments and technical details and to answer any questions that you might have. Please let me know your availability for such a call. Thank you.

Sincerely,

Peter Magolske
Air/RCRA Compliance Unit

Enclosure

cc: Brian Monson,
Idaho Department of Environmental Quality

P. Scott Burton,
Hunton & Williams, LLP

Enclosure

References:

Crumbling, D. M. (2002). "In Search of Representativeness: Evolving Enviornmental Data Quality Model." Quality Assurance 9(3): 179 - 190. http://www.informaworld.com/10.1080/713844024

Crumbling, D. M., J. S. Hayworth, B. A. Call, W. M. Davis , R. Howe, D. S. Miller and R. Johnson (2004). "The maturing of the Triad approach: Avoiding misconceptions." Remediation Journal 14(4): 81-96. http://dx.doi.org/10.1002/rem.20023

Diamond, G. (2011). Toxicity values for risk screening of mercury. M. Stifelman. Akron, NY, SRC, Inc.: 2 p.

Diamond, G. (2011). Toxicity values for risk screening of vanadium. M. Stifelman. Akron, NY, SRC, Inc.: 2 p.

Stifelman, M. (2008). Recommended toxicity value for uranium, noncancer endpoint. Seattle, WA, U.S. EPA, Region 10: 3.

U.S. Environmental Protection Agency (2002). Guidance on Choosing a Sampling Design for Environmental Data Collection for Use in Developing a Quality Assurance Project Plan. Washington, DC, Office of Science and Technology and Office of Water. http://www.epa.gov/QUALITY/qs-docs/g5s-final.pdf.

U.S. Environmental Protection Agency (2006). Method 8330B Revision 2: Nitroaromatics, nitramines, and nitrate esters by High Performance Liquid Chromatography (HPLC); Appendix A - collecting and processing of representative samples for energetic residues in solid matrices from military training ranges. Washington, D.C., Office of Solid Waste: 60. http://www.epa.gov/SW-846/new-meth.htm#8330B.

U.S. EPA (2002). Guidance for comparing background and chemical concentrations in soil for CERCLA sites. Washington, DC, Office of Emergency and Remedial Response, U.S. Environmental Protection Agency: 89. http://earth1.epa.gov/oswer/riskassessment/pdf/background.pdf.

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Sincerely,

Peter Magolske
Air/RCRA Compliance Unit

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cc: Brian Monson,
Idaho Department of Environmental Quality

P. Scott Burton,
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bcc: Barbara McCullough